

Attorney's Docket No.: 12967-002001  
Client's Ref. No.: 997047-06

(TM/it)

**OFFICIAL COMMUNICATION**  
**FACSIMILE**  
**FOR THE PERSONAL ATTENTION OF:**  
**EXAMINER ROBERT KUNEMUND**

**GROUP 1765 FAX NO: (703) 872-9439**

Number of pages including this page 2

Applicant : Tomohiro Kawase et al.  
Serial No. : 09/824,965  
Filed : April 3, 2001

Art Unit : 1765  
Examiner : Robert Kunemund

**FACSIMILE COMMUNICATION**

Title : Method Of Preparing Group III-V Compound Semiconductor Crystal

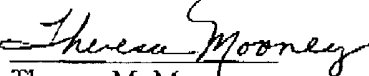
Commissioner for Patents  
Washington, D.C. 20231

Sir:

Attached to this facsimile communication cover sheet is the first page of  
APPLICANT'S THIRD INFORMATION DISCLOSURE STATEMENT with the signed  
Certificate of Transmission By Facsimile,, faxed this 6<sup>th</sup> day of February, 2003, to Group 1765,  
the United States Patent and Trademark Office.

Respectfully submitted,

Date: February 6, 2003

  
Theresa M. Mooney

Secretary to John B. Pegram (Reg. No. 25,198)

Fish & Richardson P.C.  
45 Rockefeller Plaza, Suite 2800  
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Attorney's Docket No.: 12967-002001 / 997047-06 (TM/it)

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Tomohiro Kawase et al.                      Art Unit : 1765  
Serial No. : 09/824,965                                      Examiner : Robert Kunemund  
Filed : April 3, 2001  
Title : METHOD OF PREPARING GROUP III-V COMPOUND SEMICONDUCTOR  
CRYSTAL

Commissioner for Patents  
Washington, D.C. 20231

APPLICANT'S THIRD INFORMATION DISCLOSURE STATEMENT**1. Introduction**

In accordance with the duty of disclosure, and out of an abundance of caution, a form PTO-1449 and the listed documents are submitted herewith. The documents are a January 29, 2003 letter from Protestor Charles W. Bradley to Applicant's undersigned attorney and the undated Declaration of Hunter D. Marshall identified therein ("Marshall Declaration").<sup>1</sup> The declarant, Mr. Marshall, claims to be one of the authors of the Marshall-DeCuir Article, cited in the Bradley Protest filed on or about September 24, 2002.

By submitting this information, Applicant does not admit that the Marshall declaration is prior art or that it material to the examination of the present reissue application.

Applicant and its undersigned attorney believe that Mr. Bradley sent his January 29, 2003 letter and Marshall Declaration to Applicant's undersigned attorney with the knowledge and understanding that—if Mr. Bradley had sent the Marshall Declaration directly to the USPTO as a supplement to the Bradley Protest—it might not have been considered because it does not provide additional prior art or raise "new issues which could not have been earlier presented." 37 C.F.R. § 1.291(c).

<sup>1</sup> The Bradley letter is submitted because it provides the only available date relating to the Marshall Declaration.

## CERTIFICATE OF TRANSMISSION BY FACSIMILE

I hereby certify that this correspondence is being transmitted by facsimile to the Patent and Trademark Office on the date indicated below.

February 6, 2003  
Date of Transmission  
Signature *Theresa Mooney*

Theresa Mooney  
Typed or Printed Name of Person Signing Certificate

Attorney's Docket No.: 12967-002001  
Client's Ref. No.: 997047-06

(TM/it)

**OFFICIAL COMMUNICATION**  
**FACSIMILE**  
**FOR THE PERSONAL ATTENTION OF:**  
**EXAMINER ROBERT KUNEMUND**

**GROUP 1765 FAX NO: (703) 872-9439**

Number of pages including this page 14

Applicant : Tomohiro Kawase et al.  
Serial No. : 09/824,965  
Filed : April 3, 2001

Art Unit : 1765  
Examiner : Robert Kunemund

**FACSIMILE COMMUNICATION**

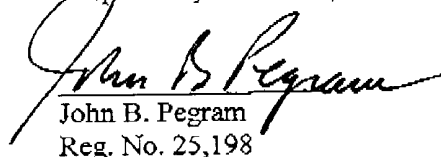
Title : Method Of Preparing Group III-V Compound Semiconductor Crystal

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Attached to this facsimile communication cover sheet is an Information Disclosure Statement and attached PTO Form 1449 with references, faxed this 6<sup>th</sup> day of February, 2003, to Group 1765, the United States Patent and Trademark Office.

Respectfully submitted,

  
John B. Pegram  
Reg. No. 25,198

Date: February 6, 2003

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Attorney's Docket No.: 12967-002001 / 997047-06 (TM/it)

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Tomohiro Kawase et al.                      Art Unit : 1765  
Serial No. : 09/824,965                                      Examiner : Robert Kunemund  
Filed : April 3, 2001  
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CRYSTAL

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APPLICANT'S THIRD INFORMATION DISCLOSURE STATEMENT**1. Introduction**

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Date of Transmission February 6, 2003

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Theresa Mooney  
Typed or Printed Name of Person Signing Certificate

Applicant : Tomohiro Kawase et al.  
Serial No. : 09/824,965  
Filed : April 3, 2001  
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Further, we believe that Mr. Bradley expected that Applicant and its undersigned attorney would send the Marshall Declaration to the USPTO, and that the Examiner would be obliged to consider the Marshall Declaration for whatever it may be worth if presented in this manner.

As previously noted, we recognize Mr. Bradley and Mr. Molano, who filed an earlier Protest on or about April 30, 2002, as attorneys who have represented AXT, Inc. in dealings with the reissue applicant concerning the subject of this reissue application, AXT's infringement of the original U.S. Patent No. 6,007,622 and the proposed interference with AXT's U.S. Patent No. 6,045,767. It appears, therefore, that the repeated protests and the Marshall Declaration are intended to delay the reissue and declaration of interference.

We urge the Examiner to promptly consider the Marshall Declaration for what it is worth. As discussed below, it does not contribute significantly to the examination.

## **2. The Marshall Declaration as It Relates to the Bradley Protest**

The Bradley Protest contended that the Marshall-DeCuir Article anticipates certain claims of the reissue application. (*See* Response to Protest of Charles W. Bradley ("Response"), §§ 1, 2 & 4-5.5) The Marshall Declaration, however, does not appear to be addressed to the issue of anticipation. Therefore, it appears that AXT has abandoned the basis for the Bradley Protest.

The Bradley Protest did not assert any other grounds of unpatentability and, in particular, did not address factors relating to a determination of obviousness. The Marshall Declaration states in various places that something would have been obvious, but does not make a showing of obviousness in accordance with 35 U.S.C. § 103. (*See* Response at §§ 1)

## **3. The Marshall Declaration**

The Marshall Declaration appears to be intended to show that Marshall is a prior inventor of the broad idea of doping with excess carbon in the crucible; however the Marshall-DeCuir Article fails to show recognition of that concept. Both the declaration and the Marshall-DeCuir article to which it repeatedly refers, however, fail to show that Marshall appreciated the inventions of the claims in question in 1991. (*See* Response §§ 3-5.5) The declaration is simply an uncorroborated exercise of hindsight, after study of the Applicant's patent. (*See* ¶ 4)

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The Marshall Declaration does not relate its statements in any logical way to the reissue application claims. It does not demonstrate a teaching or suggestion of any claimed combination.

Marshall states that Mr. Bradley retained him, *inter alia*, "to respond to certain specific questions." (See ¶ 4) The questions are not stated.

Although Marshall states that he reviewed the Response To Protest of Charles W. Bradley" (see ¶ 4), he does not respond to many of the points in that Response.

The Marshall Declaration refers to a person of "ordinary skill in the art in 1991" as understanding this or that. (See, e.g., ¶¶ 5, 7-9, 11, 14-15, 19) It does not specify the level of skill of persons or ordinary skill in the art in 1991. It does not specify Marshall's basis for testifying about the knowledge of such persons.

It appears that Marshall's skill level was above that of "ordinary" in 1991, at least with respect to the subject of the Marshall-DeCuir article. He apparently was studying for a Masters degree relating to GaAs, had worked in the field of GaAs LEC crystal growth for five or more years and co-authored the Marshall-DeCuir article. (See ¶¶ 2-3) Because of Mr. Marshall's specific experience in the work described in that article, and as co-author, he is not qualified as an independent expert to evaluate how others would understand the article.

Much of the Marshall Declaration is directed to explaining the Marshall-DeCuir article and suggesting how it should be understood. (See ¶¶ 5-11 & 14-15) The fact that Mr. Bradley and AXT believed such an explanation necessary indicates the inadequacy of the article as a reference. The number of items that a person of ordinary skill would have to add to the article's disclosure by "understanding" indicates the lack of teaching or suggestion of the Applicant's claimed inventions. We also point to the inconsistency between the declaration's assertions of what would be understood about carbon sources and the Marshall-DeCuir article's admission at paragraph 1, lines 13-15, that "The contribution of graphite parts [e.g., heaters] to melt carbon is still unclear...." (See Response §3.1)

In the last sentence of paragraph 5, the Marshall Declaration refers to "the target concentration of about  $3.5E+15$  to obtain the desired semi-insulating properties." The Marshall-DeCuir article, however, does not describe that "the target carbon concentration" to obtain "the desired semi-insulating properties" is " $3.5E+15$ ."

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It is surprising that the Marshall Declaration now asserts that persons of ordinary skill would have understood his rubbing process placed excess carbon in a crucible (*see* ¶¶ 5 & 9); whereas in 1990-91, he co-authored the Marshall-DeCuir article, which purported to teach his rubbing process as new. The article did not describe how much carbon adhered to the crucible, the surface characteristics of the crucible or adhesion process, or what happened to the carbon that did not adhere. (*See* Response §§ 3.1 & 4.2) The article fails to disclose, teach or suggest the additional, necessary details that AXT, Mr. Bradley and Mr. Marshall now attempt to fill in by hindsight.

The Marshall Declaration itself casts doubt on how much carbon was adhered the crucible in accordance with the Marshall-DeCuir article's disclosure of "vigorously rubbing 0.0012 g. of 99.99% carbon fiber into the inside bottom of the PBN crucible prior to loading with GaAs" (page 962, col. 1, lines 19-22, emphasis added) We understand the purpose of the "vigorously rubbing" was to prevent the graphite carbon (which typically has a low density of 2.25) from floating on the melt.

Specifically, paragraph 9 of the declaration stated that it would be understood that the PBN of the crucible was not porous and that carbon would adhere over a large area. (*See* ¶¶ 5 & 9)

Contrary to the Marshall Declaration, there is nothing in the Marshall-DeCuir article which discloses the degree of roughness or surface porosity of the PBN crucible. The declaration is unsupported by any evidence regarding roughness or surface porosity of solid PBN of any kind. The allegation that it would be understood that the PBN of the crucible was not porous is totally unsupported. If the Examiner wishes to pursue this line, we will provide evidence of PBN having sufficient roughness for receiving carbon particles as a result of the disclosed "vigorously rubbing."

Contrary to the Marshall Declaration, we do not find any reference or suggestion in the article to adhering carbon over a "large area"; only "rubbing ... carbon fiber into the inside bottom..." Neither the article nor the declaration explain how carbon would adhere to the crucible and in what form. We understood the article to mean the fibers would break into particles that would lodge in surface pores. There does not appear to be anything to the contrary in the article. If the PBN crucible was not very porous—as Marshall now asserts—it appears that

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little carbon would adhere. The disposition of any left-over carbon is not stated in the article. If, as we understand, the purpose of to prevent the graphite carbon from floating on the melt; then any non-adhered carbon would have been discarded. (Contrary to the Marshall Declaration, the article does not disclose or suggest that all of the carbon adheres to the crucible at the time of rubbing.)

Paragraph 11 of the Marshall Declaration asserts that one of ordinary skill would have known that the carbon content in crystal D was due to "active doping using carbon fibers." We disagree. The fact that the carbon concentration of crystal D is within the range of crystals A & B indicates that the carbon source for both is the same—the heaters. One of ordinary skill would not have expected the carbon concentration of crystal C to be closer to that of crystal D if the heaters are the carbon source, as argued in paragraph 11, because the carbon concentration of crystal C was intentionally reduced by bubbling  $As_2O_3$  through the GaAs melt, in accordance with the principal teaching of the article.

In paragraph 13, discussing Yamashita, Marshall mentions the source of carbon issue, suggesting there and elsewhere that the carbon source was not the heaters. There are two problems with that argument, which is not developed in the declaration. First, a teaching of Yamashita is that the heaters contribute carbon. The Marshall Declaration does not rebut that. Second, the first paragraph of the Marshall-DeCuir article admits the authors' lack of a clear understanding of the sources of carbon. (See Response § 3.1) The declaration's statements of what a person of ordinary skill would understand is inconsistent with that admission.

Paragraph 19 of the Marshall Declaration seeks to bridge the gap between applicant's claimed inventions and the LEC method that is described in the Marshall-DeCuir article and discussed in the previous paragraphs 3-18 of the declaration. Paragraph 19 relies on what Marshall asserts a person of ordinary skill would have known. The declaration fails to address the differences between the article's LEC process and the claimed process. As discussed in sections 3 and 4.1 of the Response, the Marshall-DeCuir article does not disclose the "solidifying ... to grow" limitation that distinguished Applicant's claim 1 and the other claims referenced in the Bradley Protest.

The Marshall Declaration does not address the subjects of the additional limitations in dependent claims 2, 13 and 20-22, discussed in Response sections 5.1, 5.3-5.5. .



Applicant : Tomobiro Kawase et al.  
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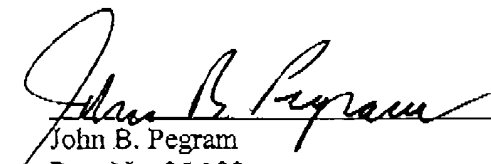
**4. Statement Under 37 C.F.R. § 1.97(c) & (e)(2)**

This statement is being filed after a first Office action on the merits, but before receipt of a final Office action or a Notice of Allowance. I, the undersigned, hereby certify that each document submitted with this statement was not cited in a communication from a foreign patent office in a counterpart foreign application, that they first came to my attention at approximately 5 pm on January 29, 2003, and that they were not known to any individual designated in 37 C.F.R. § 1.56(a) more than three months prior to the filing of this statement.

Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: February 6, 2003.

  
\_\_\_\_\_  
John B. Pegram  
Reg. No. 25,198

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Sheet 1 of 1

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 12967-002001	Application No. 09/824,965
<b>Information Disclosure Statement by Applicant</b> (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant Tomohiro Kawase et al.	
		Filing Date April 3, 2001	Group Art Unit 1765

U.S. Patent Documents							
Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

Foreign Patent Documents or Published Foreign Patent Applications								
Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation	
							Yes	No
	AL							
	AM							
	AN							
	AO							
	AP							

Other Documents (include Author, Title, Date, and Place of Publication)		
Examiner Initial	Desig. ID	Document
	AY	Letter, Charles W. Bradley to John B. Pegram, January 29, 2003 (1 p.)
	AZ	Declaration of Hunter D. Marshall, undated (5 pp.)

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

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Substitute Disclosure Form (PTO-1449)